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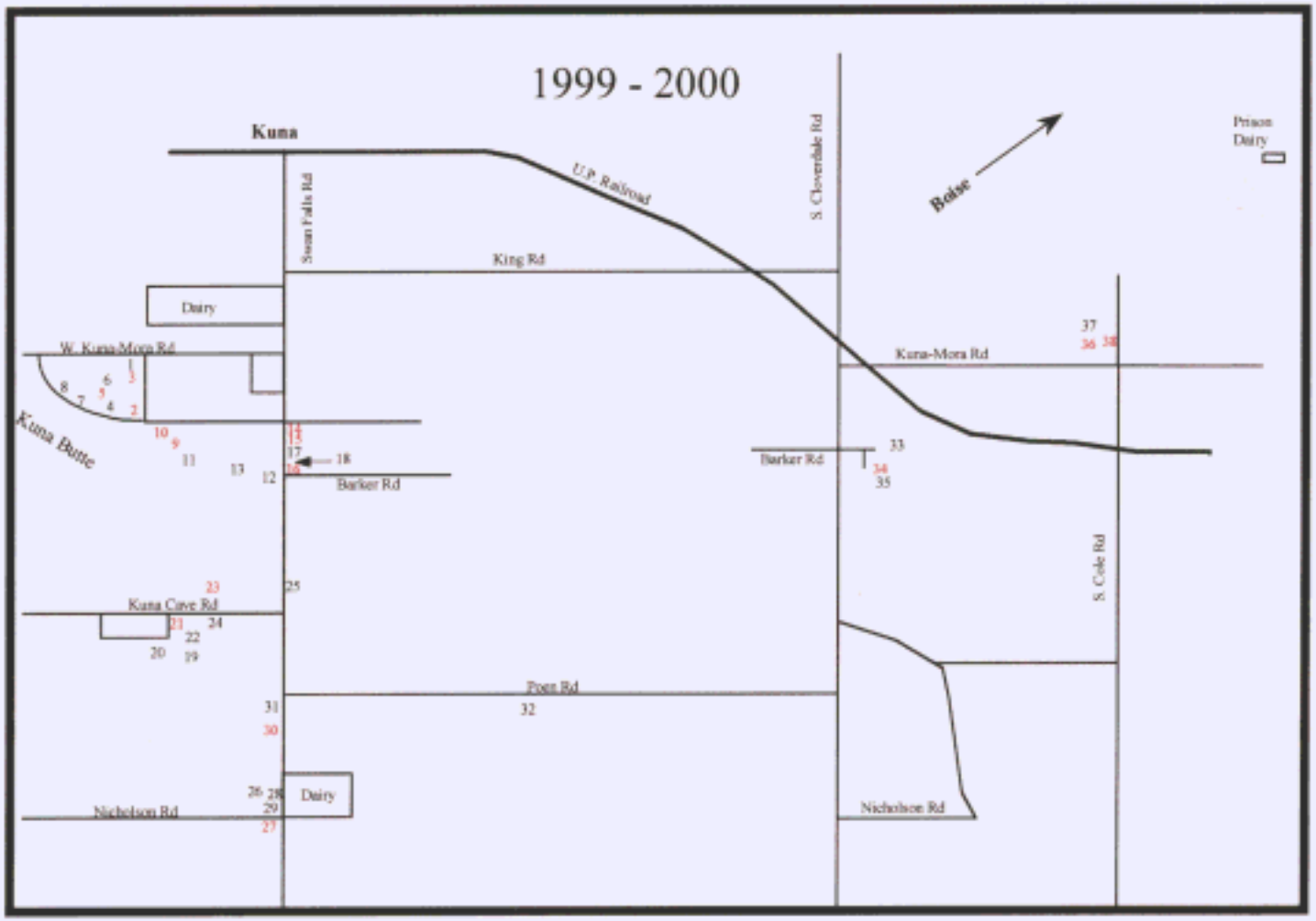

Figure 1. Schematic of Kuna Butte study area (1999 - 2000) located approximately 3.2 km south of Kuna, Ada County, Idaho. See page 11 for explanation of sites. Scale: 1 in. = approx. 0.8 mi.

Legend for Fig. 1. Numbers on map correspond to artificial burrow clusters in the Kuna Butte study area. Black numbers indicate that site was unoccupied, and red numbers indicate that owls attempted nesting at the site in either or both 1999 and 2000.

1 Junkyard #1
2 Kuna Butte #1b
3 Kuna Butte #3
4 Kuna Butte #5
5 Kuna Butte #6
6 Kuna Butte #7
7 Kuna Butte Gravel #1
8 Kuna Butte Gravel #2
9 Kuna Butte Ag #1
10 Kuna Butte Ag #2
11 Kuna Butte Ag #3
12 Honeybee #1
13 Honeybee #2
14 Effluent Field North #2A
15 Effluent Field North #3A
16 Effluent Field South #1A
17 Effluent Field South #2A
18 Effluent Field South #3A
19 Kuna Cave #2
20 Kuna Cave #3
21 Kuna Cave Satellite #1
22 Kuna Cave Satellite #2
23 Kuna Cave Ag #1
24 Kuna Cave Ag #2
25 Swan Falls #1
26 Swan Falls #3
27 Swan Falls #4
28 Swan Falls Satellite #5
29 Swan Falls #6
30 Swan Falls #7
31 Swan Falls Ag #1
32 Swan Falls Ag #2
33 Poen #1
34 J. Hayes #1
35 J. Hayes #2
36 J. Hayes #3
37 B. Stewart #1
38 B. Stewart #2
39 B. Stewart #3

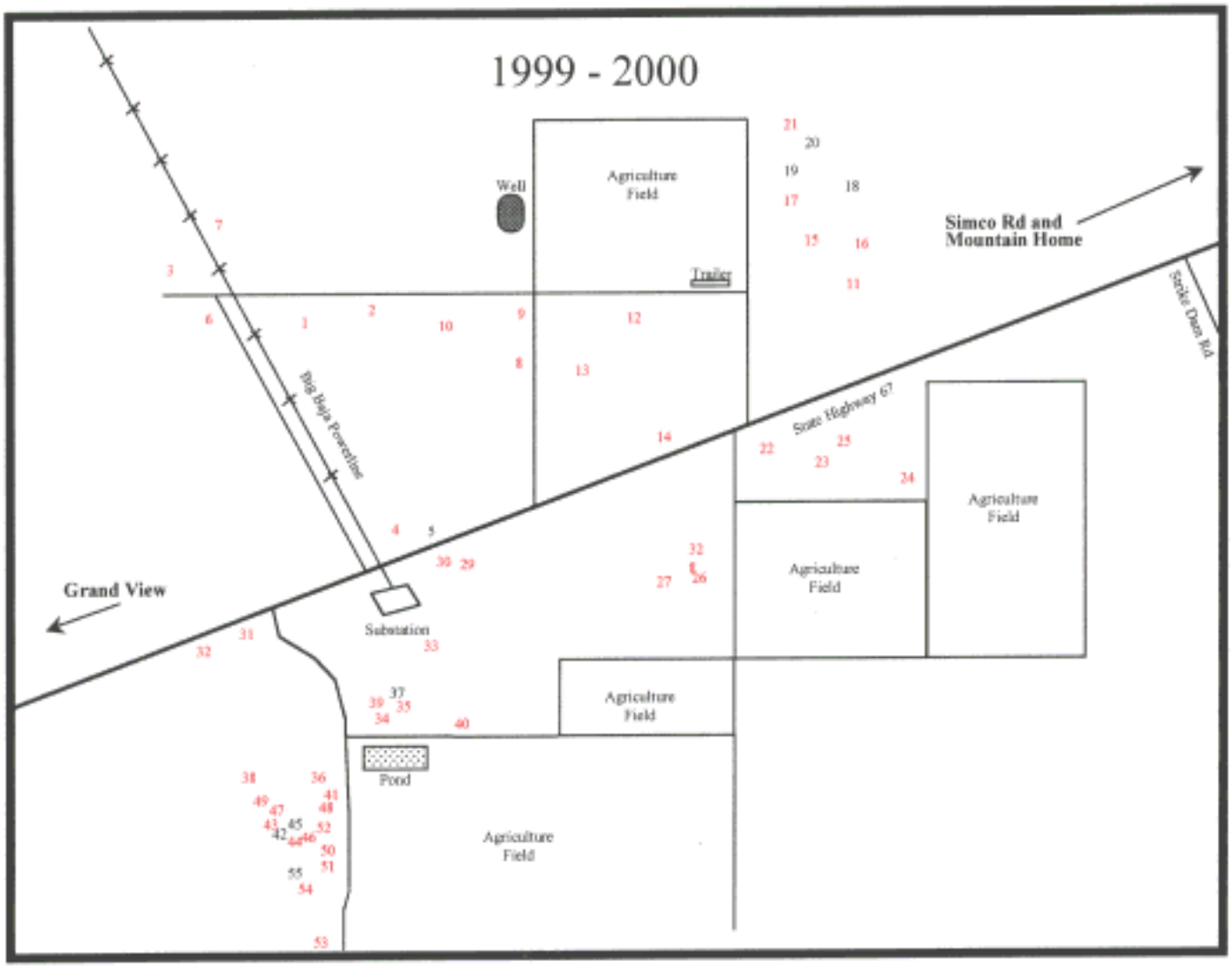

Figure 2. Schematic of Grand View study area (1999 - 2000) located approximately 8 km north-northeast of Grand View, Elmore County, Idaho. See page 13 for explanation of sites. Scale: 1 in. = approx. 0.25 mi.

Legend for Fig. 2. Numbers on map correspond to artificial burrow clusters within the Grand View study area (1999 - 2000). Black numbers indicate that site was unoccupied in both years, while red numbers indicate that a nesting attempt was made at that site in either or both 1999 and 2000.

1 Baha #1
2 Baha #2
3 Baha #3
4 Baha #4
5 Baha #5
6 Baha #6
7 Baha #7
8 Well #1
9 Well #2
10 Well #3
11 Trailer #1
12 Trailer #2
13 Trailer #4
14 Trailer #5
15 Trailer #6
16 Trailer #7
17 Backyard #1
18 Backyard #2
19 Backyard #3
20 Backyard #4
21 Backyard #5
22 Backyard #6
23 Backyard #7
24 Trailer View #1
25 Trailer View #2
26 Trailer View #3
27 Trailer View #4
28 Grand View #2
29 Grand View #3
30 Grand View #19
31 Substation East #1
32 Substation East #2
33 Highway #1
34 Highway #2
35 Substation Southeast #1
36 Substation South #1
37 Substation South #2
38 Substation South #4
39 Substation South #5
40 Substation South #6
41 Substation South #7
42 Baha Pole #19
43 97-1
44 Dirtmound #1 (97-2)
45 Dirtmound #2
46 Dirtmound #3 (97-3)
47 Dirtmound #4
48 Dirtmound #5
49 Coyote Den #1
50 Powerline #1
51 Powerline #2
52 Powerline #3
53 Powerline #4
54 Powerline #5
55 398-1
56 398-2
57 398-3

a)

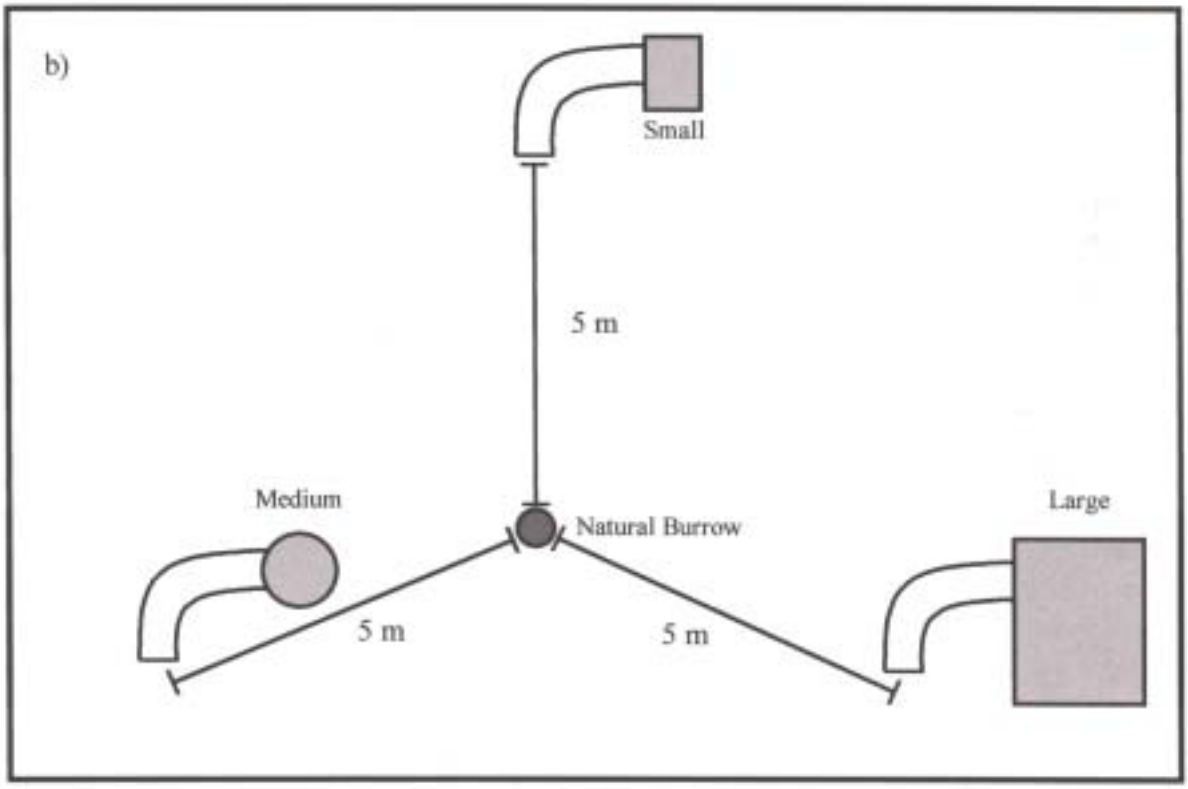

Figure 3. (a) Chamber materials for the chamber choice experiment. From left to right are the small, large, and medium chambers. (b) Configuration of chambers around natural burrows for the chamber choice experiment (see text for explanation).

a)

b)

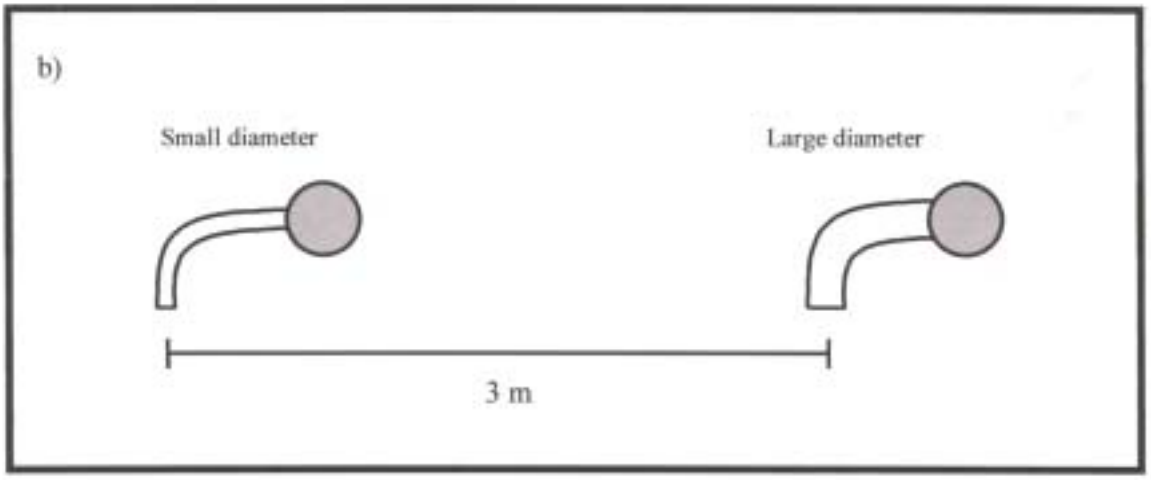

Figure 4. (a) Tunnel and chamber materials for the tunnel diameter choice experiment. From left to right is the large tunnel, 5 gal. chamber, and small tunnel. (b) Configuration of chambers for the tunnel diameter choice experiment (see text for explanation).

Figure 5. Burrowing owl eggs in medium (left) and large (right) chambers of artificial burrows.

Figure 6. Young burrowing owls produced in artificial burrows in the Snake River Birds of Prey National Conservation Area, Idaho. Owls were banded with colored leg bands for future identification.

Figure 7. Banding adult (left) and young (right) burrowing owls with numbered colored leg bands (white and yellow).

Figure 8. Adult burrowing owl using wooden perch placed near nest in artificial burrow. Each year in the Snake River Birds of Prey National Conservation Area, many pairs of burrowing owls use artificial burrows for nesting, and artificial burrows continue to be an important tool in habitat management activities for burrowing owls.

Table 1. Pattern of artificial nest burrow (re-) use in the Kuna Butte study area (1997 - 2000). X = artificial burrow used for nesting; O = artificial burrow not used for nesting, confirmed; - = burrow likely not used, confirmation lacking; NM = burrow not monitored for use during study; D = burrow destroyed; NE = artificial burrow cluster did not exist.

Nest Name	Cluster Size[a]	1997	1998	1999	2000
Sewage Pond #1	3	X	D	D	D
Sewage Pond #2	3	X	D	D	D
Kuna Butte #lb	3	X	O	-	X
Andy #1 (Kuna Butte #3)	2	X	X	X	X
Kuna Butte #5	3	O	O	O	O
Andy #2 (Kuna Butte #6)	2	NE	X	X	O
Kuna Butte #7	3	O	O	O	O
Kuna Butte Gravel #1	2	X	O	O	O
Kuna Butte Gravel #2	2	O	O	O	O
Junkyard #1	2	NE	O	O	O
Effluent Field North #1	3	X	X	D	D
Effluent Field North #2	2	X	X	D	D
Effluent Field North #3	3	NE	X	D	D
Effluent Field South #1	3	X	X	D	D
Effluent Field South #2	2	X	X	D	D
Effluent Field South #3	2	NE	X	D	D
Effluent Field North 2A	2	NE	NE	X	O
Effluent Field North 3A	2	NE	NE	X	O
Eflluent Field South 1A	2	NE	NE	X	X
Effluent Field South 2A	2	NE	NE	-	O
Eflluent Field South 3A	2	NE	NE	-	O
Honeybee #1	2	NE	O	O	O
Honeybee #2	2	NE	O	O	O
Kuna Cave #2	3	O	O	O	O
Kuna Cave #3	3	O	O	O	O
Kuna Cave Satellite #1	2	X	X	X	X
Kuna Cave Satellite #2	2	O	O	O	O
Kuna Cave Ag #1	2	NE	O	O	X
Kuna Cave Ag #2	2	NE	X	O	O
Kuna Butte Ag #1	2	X	X	X	O
Kuna Butte Ag #2	2	NE	X	X	O
Kuna Butte Ag #3	2	NE	O	O	O
Swan Falls Ag #1	2	NE	X	-	-
Swan Falls Ag #2	2	NE	X	X	X

Table 1. Continued.

Nest Name	Cluster Size[a]	1997	1998	1999	2000
Swan Falls #3	3	O	O	-	-
Swan Falls #4	3	X	X	-	-
Swan Falls Satellite #5	2	O	X	X	X
Swan Falls #6	3	NE	X	-	-
Swan Falls #7	3	NE	X	-	-
John Hayes #1	3	O	X	NM	-
John Hayes #2	3	O	X	X	O
John Hayes #3	3	O	O	NM	O
B. Stewart #1	3	X	X	NM	X
B. Stewart #2	3	X	X	NM	O
B. Stewart #3	3	NE	X	NM	X
Poen #1	3	NE	O	NM	-
Prison #1	3	O	D	D	D
Prison #2	2	X	D	D	D
Prison #3	2	O	D	D	D

[a]clusters of three placed around natural burrows used for nesting in previous year; clusters of two placed in nearby suitable habitat.

Table 2. Pattern of artificial nest burrow (re-) use in the Grand View study area (1997 - 2000). X = artificial burrow used for nesting; O = artificial burrow not used for nesting, confirmed; - = burrow likely not used, confirmation lacking; NM = burrow not monitored for use during study; D = burrow destroyed; NE = artificial burrow cluster did not exist.

Nest Name	Cluster Size[a]	1997	1998	1999	2000
Trailer #1	3	X	X	X	X
Trailer #2	3	X	X	X	X
Trailer #4	3	X	X	X	X
Trailer #5	3	NE	X	X	X
Well #1	3	O	X	X	X
Well #2	3	X	O	X	X
Well #3	2	X	X	X	X
Baja #1	3	X	X	X	X
Baja #2	2	X	X	X	X
Baja #3	2	X	X	X	X
Baja #4	2	O	X	X	X
Baja #5	3	NE	O	O	O
Baja #6	2	NE	X	X	X
Baja #7	2	NE	O	X	X
Substation East #1	3	X	X	O	X
Substation East #2	3	NE	O	X	X
Trailer View #1	3	X	X	X	X
Trailer View #2	2	O	O	X	O
Trailer View #3	2	O	O	O	X
Trailer View #4	3	X	O	O	X
Grand View #2	3	O	X	O	X
Grand View #3	3	O	O	X	X
Grand View #19	3	X	X	X	O
Highway #1	2	NE	X	X	X
Highway #2	2	NE	O	X	O
Substation South #1	3	X	O	X	X
Substation South #2	3	X	X	X	X
Substation South #4	3	O	X	X	X
Substation South #5	3	X	X	O	O
Substation South #6	3	X	X	X	O
Substation South #7	3	O	X	X	X
Substation Southeast 1	2	O	X	X	X
Baja Pole #19	2	X	X	X	X
Powerline #1	2	O	X	X	X
Powerline #2	2	X	X	X	X
Powerline #3	2	X	X	O	X

Table 2. Continued.

Nest Name	Cluster Size[a]	1997	1998	1999	2000
Powerline #4	2	O	X	X	X
Powerline #5	2	X	X	X	X
97-1	3	NE	O	X	O
Coyote Den #l	2	NE	X	X	O
Dirtmound #1	3	NE	O	O	O
Dirtmound #2	2	NE	X	X	X
Dirtmound #3	2	NE	O	X	O
Dirtmound #4	2	NE	X	O	O
Dirtmound #5	2	NE	O	O	X
398-1	3	NE	X	X	X
398-2	3	NE	X	O	X
398-3	3	NE	O	O	O
Backyard #1	2	O	X	X	X
Backyard #2	3	NE	O	X	X
Backyard #3	2	NE	X	O	X
Backyard #4	2	NE	O	O	O
Backyard #5	2	NE	X	O	O
Backyard #6	2	NE	X	O	O
Backyard #7	2	NE	O	X	X

[a]clusters of three placed around natural burrows used for nesting in previous year; clusters of two placed in nearby suitable habitat.

Table 3. Number of eggs and number of banding-age young (14 – 28 d) at clusters of two and three during 1999 and 2000 in the Kuna Butte study area (1999 - 2000). Clusters not used by burrowing owls in both 1999 and 2000 have been omitted. A dash (-) indicates no nest in a particular year.

Nest Name	Cluster Size[a]	1999 Eggs	1999 Young	2000 Eggs	2000 Young
Kuna Butte #lb	3	-	-	≥ 1	1
Andy #1 (Kuna Butte #3)	2	≥ 8	8	7	5
Andy #2 (Kuna Butte #6)	2	≥ 9	0	-	-
Effluent Field North 2A	2	10[b]	6	-	-
Effluent Field North 3A	2	≥ 11	4	-	-
Effluent Field South 1A	2	9	6	8	4
Kuna Cave Satellite #1	2	≥ 11	8	9	1
Kuna Cave Ag #1	2	-	-	8	7
Kuna Butte Ag #1	2	≥ 7[c]	3	-	-
Kuna Butte Ag #2	2	11[b]	10	-	-
Swan Falls Ag #2	2	≥ 9	9	10	6
Swan Falls Satellite #5	2	≥ 8	0	11	0
John Hayes #2	3	?[d]	?[d]	-	-
B. Stewart #1	3	NM	NM	≥ 1	1
B. Stewart #3	3	NM	NM	≥ 3	3

[a]clusters of three placed around natural burrows used for nesting in previous year; clusters of two placed in nearby suitable habitat.

[b]includes one egg collected for egg physiology study in collaboration with Dr. Del Kilgore, University of Montana.

[c]three eggs collected from seemingly abandoned nest where rocks piled over entrance. Pair continued to lay and incubate in adjacent chamber.

[d]nesting confirmed by landowner, unknown number of eggs or banding age young.

Table 4. Number of eggs and number of banding-age young (14 – 28 d) at clusters of two and three during 1999 and 2000 in the Grand View study area (1999 - 2000). Clusters not used by burrowing owls in both 1999 and 2000 have been omitted. A dash (-) indicates no nest in a particular year .

Nest Name	Cluster Size[a]	1999		2000	
		Eggs	Young	Eggs	Young
Trailer #1	3	10[b]	9	9	3
Trailer #2	3	11	5	10	6
Trailer #4	3	≥ 7	2	6	6
Trailer #5	3	≥ 9	6	9	0
Well #1	3	9[b]	6	9	0
Well #2	3	11[b]	10	9	0
Well #3	2	≥ 10[b]	9	9	3
Baja #1	3	≥ 10	10	9	3
Baja #2	2	9[b]	7	10	0
Baja #3	2	11[b]	5	9	2
Baja #4	2	11[b]	7	9	0
Baja #6	2	10	4	10	0
Baja #7	2	11[b]	8	9	6
Substation East #1	3	-	-	8	0
Substation East #2	3	≥ 8	6	7	2
Trailer View #1	3	10	9	10	2
Trailer View #2	2	≥ 9	9	-	-
Trailer View #3	2	-	-	5	0
Trailer View #4	3	-	-	7	6
Grand View #2	3	-	-	9	2
Grand View #3	3	10	6	8	0
Grand View #19	3	≥ 3	3	-	-
Highway #1	2	≥ 8	8	8	2
Highway #2	2	8	6	-	-
Substation South #1	3	≥ 10	8	7	3
Substation South #2	3	11[b]	6	5	3
Substation South #4	3	9[b]	6	10	0
Substation South #6	3	9[b]	0	-	-
Substation South #7	3	5	0	9	0
Substation Southeast 1	2	8	8	8	3
Baja Pole #19	2	≥ 9	8	10	0
Powerline #1	2	9[b]	6	9	0
Powerline #2	2	9	0	9	0
Powerline #3	2	-	-	9	2

Table 4. Continued.

Nest Name	Cluster Size[a]	1999 Eggs	1999 Young	2000 Eggs	2000 Young
Powerline #4	2	8	8	8	0
Powerline #5	2	≥ 9	2	9	0
97-1	3	≥ 11	1	-	-
Coyote Den #1	2	9	1	-	-
Dirtmound #2	2	7[b]	3	8	1
Dirtmound #3	2	8[b]	6	-	-
Dirtmound #5	2	-	-	9	2
398-1	3	10[b]	9	11	0
398-2	3	-	-	8	0
Backyard #1	2	9	5	6	3
Backyard #2	3	9	6	8	5
Backyard #3	2	-	-	9	1
Backyard #7	2	10	9	8	0

[a]clusters of three placed around natural burrows used for nesting in previous year; clusters of two placed in nearby suitable habitat.

[b]includes one egg collected for egg physiology study in collaboration with Dr. Del Kilgore, University of Montana.